

CLAIMS:

1. A method for utilizing a Spanning Tree Protocol (STP) in an Ethernet network wherein a number of VLANs are defined and a plurality of Ethernet switching nodes are interconnected via their ports so that each of the ports is initially assigned to one or more VLANs, and each of the VLANs is intended to enable traffic between two or more edge ports, the method comprises:

upon establishing a new STP topology related to one or more VLANs, initiating a pruning procedure of a broadcast domain of at least one of said one or more VLANs to obtain a sub-tree for each pruned VLAN in the new STP topology, wherein each said sub-tree being bound by the edge ports assigned to the corresponding pruned VLAN, thereby eliminating broadcast traffic of each said pruned VLAN to any Ethernet switch extending beyond the obtained corresponding sub-tree. 15

2. The method according to Claim 1, further comprising the following steps to be performed at each Ethernet switching node that is active in the new STP topology and with respect to each of said one or more VLANs:

- a) ensuring that ports of the Ethernet switching node that is active in the new STP topology, are assigned to said one or more VLANs according to an initial VLANs configuration;
- b) counting forwarding ports assigned to a particular VLAN, being active according to the new STP topology;
- c) if a port assigned to a particular VLAN is a single forwarding port for said particular VLAN at said node, de-activating said port with respect to said VLAN, thereby pruning said VLAN at said port and said node;

- d) generating a de-activation message from each said single forwarding port of said node, the message indicating one or more VLANs de-activated at said port, and transmitting said de-activation message to a neighbor Ethernet switching node in the new STP topology; 5
- e) de-activating the port of the neighbor Ethernet switch, that has received said de-activation message, with respect to said one or more VLANs indicated in the message;
- f) repeating steps (b) to (e) at said neighbor node.

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3. The method according to Claim 1, wherein the new STP topology is the initial STP topology in the Ethernet network.

4. The method according to Claim 1, wherein the new STP topology is a changed STP topology in the Ethernet network. 15

5. The method according to Claim 2, wherein in the counting step, the edge ports are considered permanently forwarding ports.

6. The method according to Claim 2, wherein said de-activation message is a PDU (Protocol Data Unit) message further provided with an indication of one or more particular VLANs with respect to which said port is de-activated.

7. The method according to Claim 6, wherein the PDU message is a combined de-activation message listing all VLANs de-activated at said port.

8. The method according to Claim 1, being initiated at each particular Ethernet switching node upon receiving a Topology Change Notification (TCN) and after expiring a topology change timer.

9. A software product comprising software implementable instructions and/or data for carrying out the method according to Claim 1.

10. A carrier medium comprising a software product according to claim 9.

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12. An Ethernet switch capable of implementing the software product of Claim 9.

13. An Ethernet switch capable of performing the method according to Claim 1.

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14. A method for utilizing a Spanning Tree Protocol (STP) in an Ethernet network wherein a number of VLANs are defined and a plurality of Ethernet switching nodes are interconnected via their ports so that each of the ports is initially assigned to one or more VLANs, and each of the VLANs is intended to enable traffic between two or more edge ports, the method comprising the following step to be performed upon establishing a new STP topology in the network :

transmitting at least one de-activation message from at least one Ethernet switching node that is active in the new STP topology to a neighbor Ethernet switching node also being active in the new STP topology, indicating one or more VLANs de-activated with respect to a

port transmitting said message, so as to allow that said one or more VLANs be de-activated at a port receiving said message.

15. The method according to Claim 14, further comprising the following steps to be performed at each Ethernet switching node that is active in the new STP topology and with respect to each of said one or more VLANs:

- g) ensuring that ports of the Ethernet switching node that is active in the new STP topology, are assigned to said one or more VLANs according to an initial VLANs configuration; 10
- h) counting forwarding ports assigned to a particular VLAN, being active according to the new STP topology;
- i) if a port assigned to a particular VLAN is a single forwarding port for said particular VLAN at said node, de-activating said port with respect to said VLAN, thereby pruning said VLANs at said port and said node;
- j) generating said de-activation message from each said single forwarding port of said Ethernet switching node, the message indicating one or more VLANs de-activated at said port, for further transmitting said de-activation message to the neighbor Ethernet switching node in the new STP topology;
- k) de-activating the port of the neighbor Ethernet switch, that has received said de-activation message, with respect to said one or more VLANs indicated in the message;
- l) repeating steps (b) to (e) at said neighbor node. 25

16. The method according to Claim 14, wherein the new STP topology is the initial STP topology in the Ethernet network.

17. The method according to Claim 14, wherein the new STP topology is a changed STP topology in the Ethernet network.

18. The method according to Claim 15, wherein in the counting step, the edge ports are considered permanently forwarding ports.

19. The method according to Claim 14, wherein said de-activation message is a PDU (Protocol Data Unit) message further provided with an indication of one or more particular VLANs with respect to which said port is de-activated.

20. The method according to Claim 19, wherein the PDU message is a combined de-activation message listing all VLANs de-activated at said port.

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21. The method according to Claim 14, being initiated at each particular Ethernet switching node upon receiving a Topology Change Notification (TCN) and after expiring a topology change timer.

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22. A software product comprising software implementable instructions and/or data for carrying out the method according to Claim 14.

23. A carrier medium comprising a software product according to claim 22.

24. An Ethernet switch capable of implementing the software product of Claim 22.

25. An Ethernet switch capable of performing the method according to Claim 14.

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